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48. *Chromosome observation in Japanese ants*

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Since there have been made only a few studies on the chromosomes of ants, taxonomists could not utilize cytological data in evolutional considerations of this insect. The present authors made an attempt to coordinate karyological data with problems of ant phylogeny. As the first step, the authors made a detailed analysis of their chromosomes by using the hyaluronidase-aceto-orcein squash method in combination with the drying-method, and obtained suitable preparations. The present paper reports the chromosome numbers of 22 Japanese species belonging to 4 subfamilies (Table 1).

From these results, it became clear that the variation of the chromo-

Table 1. Chromosome numbers of Japanese ants.

	n	2n
Subfamily PONERINAE		
Brachyponera luteipes SMITH	11	22
Cryptopone sauteri WHEELER		28
Subfamily DOLICHODERINAE		
Iridomyrmex itoi FOREL	14	28
Subfamily MYRMICINAE		
Pheidole fervida SMITH	10	20
Monomorium pharaonis LINNÉ	11	
Pristomyrmex pungens MAYR	12	24
Leptothorax spinosior FOREL		24
Crematogaster laboriosa SMITH		26
Tetramorium caespitum jacoti WHEELER	14	28
Aphaenogaster sp.	16	
Aphaenogaster famelica SMITH	17	34
Vollenhovia emeryi WHEELER		36
Messor aciculatum SMITH	22	44
Subfamily FORMICINAE		
Camponotus sp.	9	18
Camponotus kiusiuensis SANTSCHI		28
Camponotus japonicus MAYR	14	
Lasius niger LINNÉ		30
Lasius talpa WILSON		30
Formica sanguinea LATREILLE	26	52
Formica truncorum yessensis FOREL	26	52
Formica japonica MOTSCHULSKY	27	54
Polyergus samurai YANO	27	54

some numbers is very wide among the genera of the same subfamily, namely, from $n=4$ to $n=27$ (including the data of PEACOCK *et al.* (1954) and HAUSCHTECK (1961, 1962)). Striking heteroploidy has been developed in two subfamilies, Formicinae ($n=8 \sim 27$) and Myrmicinae ($n=4 \sim 22$). Based on this fact, it is presumed that both subfamilies evolved independently from a very early evolutional stage in the direction toward increasing the chromosome number and developing heteroploidy. This assumption agrees with the opinion of BROWN (1954) who divided the family Formicidae into two large groups based on morphological traits, *i.e.*, Poneroid-complex including Myrmicinae and Myrmecioid-complex including Formicinae. The assumption is also supported by their wide distribution and mode of reproduction. WHEELER (1928) thought that the origin of ants is tropical, but both those subfamilies became distributed all over the world. Therefore it may be assumed that the heteroploidy occurred in various genera, one after another, in the course of their migration to new environments. At the same time, their complicated system of parthenogenetical reproduction (haploid or diploid parthenogenesis of eggs laid by the queen or especially by the workers) may have also contributed to the development of heteroploidy as know in many other parthenogenetical animals.